

November 16, 1921

THE IDEAL WALL CONSTRUCTION

This is a name given to a recently introduced form of brick construction wherein the brick is laid on edge in Flemish bond in the so-called all-rowlock type, and with front brick laid flat in the usual manner with backing of brick laid on edge in the rowlock-back type. The compression and fire tests so far made by this Bureau with this construction have been confined chiefly to the 8-inch all-rowlock wall, and the following comments should be taken as applicable only to this particular type. Further tests of solid and hollow brick walls are in progress, pending the conclusion of which our recommendations should be taken as tentative.

Load Bearing Properties

Results of compression tests indicate that the 8-inch wall can safely support the loads incident with use above foundations in buildings up to two stories of moderate height, with floor loads not heavier than those pertaining to residence occupancy. It is believed that the floor and roof joists should be supported on continuous header courses, to give adequate bearing, enable spaces between joists to be filled solid with brick and mortar as a foundation for the wall above, break up the flue space in the wall and increase the transverse strength at the floor line. The brick should not be softer than the medium grade (compressive strength 2000 lb. per sq. in. as tested on edge) and the mortar not leaner than 1:1:6 volume parts of Portland cement, hydrated lime or slaked lime putty, and loose damp sand, and be spread liberally for the bed joints. Full vertical joints should be obtained by buttering ends of the brick and shoving into place. The walls, both bearing and non-bearing, in common



with the solid walls, need anchorage into the floor construction at intervals of about 6 feet, the portion of the anchor in the wall extending through the header course at the floor line. Proper bonding details must be used at corners and openings. As with all masonry walls of this thickness, the thrust from the roof construction should be resisted wholly by the roof or floor members to avoid outward bulging of the top of the wall, and the roof be provided with adequate vertical anchorage into the walls.

Fire Resistance

The fire tests indicate somewhat higher heat transmission and distortion under moderate exposure than with solid walls, although not large enough to preclude use in exterior walls or interior partition walls of buildings of the residence or similar class. It is not believed that this wall, at least not in the 8-inch thickness, is suitable for use in party or fire walls, although it probably can be used where properly constructed and supported, in interior fire partitions and around vertical openings. These statements are based upon the performance of the wall as subjected to a fire test of six hours, the general furnace temperature at the end of the test being near 1177° C (2150° F).

Insulation

This Bureau has made no tests of the heat and moisture insulating properties of the wall at ordinary temperatures, the tests so far made having been confined to strength and fire resistance, these being the properties subject to municipal regulation.

The above is submitted for your information and is not intended for publication.

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